CLAIMS LISTING

1. (Original) An electrical connector box comprising:

a case having open top and bottom portions, and a side opening provided in a side wall of said case;

a top cover for covering the open top portion;

a bottom cover for covering the open bottom portion;

a power distribution unit including:

a printed circuit board having a first surface with bus bars thereon and a second surface with electronic components thereon, the bus bars and electronic components being electrically connected through openings provided in said printed circuit board;

a circuit board frame surrounding a perimeter portion of said printed circuit board, said circuit board frame including a central opening through which a central portion of said printed circuit board is exposed; and

a metal plate having a first surface positioned against said circuit board frame to cover the first surface of said printed circuit board, said metal plate including cooling fins on a second surface thereof; and

a side frame engaging a perimeter of said power distribution unit and connected to said case for mounting said power distribution unit onto said case with the cooling fins exposed,

wherein said power distribution unit is inserted into and covers the side opening of said case in a vertical orientation, so that the electronic components on the second surface of said printed circuit board are oriented toward an interior of said case, and the cooling fins are oriented toward an exterior of said case.

2. (Original) The electrical connector box according to claim 1, wherein said circuit board frame includes plural terminal connector receptacles which extend toward the interior of said case, and the bus bars include end tab portions bent around edges of said printed circuit board and extending beyond the second surface of said printed circuit board into the terminal connector receptacles of said circuit board frame, so that terminal connectors on the ends of electrical wires are horizontally inserted into the terminal connector receptacles with the electric wires extending through cutout portions provided in said bottom cover.

3. (Original) The electrical connector box according to claim 1, wherein said circuit board frame includes plural parallel fins which extend toward the exterior of said case, the fins of said circuit board frame being aligned with and adjacent to end portions of the cooling fins of said metal plate.

4. (Original) The electrical connector box according to claim 1, wherein said power distribution unit includes an upper latch tab configured to engage a latch opening provided in a wall of said case above the side opening, and said power distribution unit is fastened to said case with at least one bolt and at least one nut.

5. (Original) The electrical connector box according to claim 1, wherein said case includes opposed wall portions adjacent to the side opening, the opposed wall portions including plural lock tabs configured to engage with plural lock clips provided on said side frame for connecting said side frame to said case.

6. (Original) The electrical connector box according to claim 1, wherein said side frame includes an upper stopper lip configured to be inserted into a latch bracket provided on a wall of said case above the side opening.

7. (Original) The electrical connector box according to claim 6, wherein said power distribution unit includes an upper latch tab configured to engage a latch opening provided in the wall of said case above the side opening.

8. (Original) The electrical connector box according to claim 7, wherein the latch bracket extends upwardly from the perimeter of the latch opening, whereby insertion of the stopper lip into the latch bracket covers the latch opening.

9. (Original) The electrical connector box according to claim 1, wherein said case includes an inner partition wall separating a large inner compartment configured to contain a fusible link block from a small inner compartment configured to contain a relay block, the side opening being provided in a wall of the large inner compartment, and

said bottom cover covering the open bottom portions of the large inner compartment and the small inner compartment, said bottom cover including cutout portions through which electric wires connected to the fusible link block and the relay block extend.

10. (Currently Amended) An electrical connector box comprising:

a case containing at least one inner compartment and a side opening provided in a vertical side wall of said case and communicating with the at least one inner compartment;

a power distribution unit inserted into and covering the side opening of said case in a vertical orientation; and

a side frame engaging a perimeter of said power distribution unit and connected to said case, said side frame mounted on the perimeter of said power distribution unit to fix ~~for mounting~~ said power distribution unit onto said case.

11. (Original) The electrical connector box according to claim 10, wherein the at least one inner compartment includes a large inner compartment configured to contain a fusible link block and a small inner compartment configured to contain a relay block, said case further including a bottom having cutout portions through which electric wires connected to the fusible link block and the relay block extend.

12. (Original) The electrical connector box according to claim 10, wherein said power distribution unit includes:

a printed circuit board having a first surface with bus bars thereon and a second surface with electronic components thereon;

a circuit board frame surrounding a perimeter portion of said printed circuit board, said circuit board frame including a central opening through which a central portion of said printed circuit board is exposed; and

a metal plate having a first surface positioned against said circuit board frame to cover the first surface of said printed circuit board, said metal plate including cooling fins on a second surface thereof.

13. (Original) The electrical connector box according to claim 12, wherein the electronic components on the second surface of said printed circuit board are oriented toward the at least one inner compartment of said case, and the cooling fins on the second surface of said metal plate are oriented toward the exterior of said case.

14. (Original) The electrical connector box according to claim 12, wherein said circuit board frame includes plural terminal connector receptacles which extend toward the at least one inner compartment of said case, and the bus bars include end tab portions bent around edges of said printed circuit board and extending beyond the second surface of said printed circuit board into the terminal connector receptacles of said circuit board frame.

15. (Original) The electrical connector box according to claim 14, wherein terminal connectors on the ends of electrical wires are horizontally inserted into the terminal connector receptacles of said circuit board frame, and the electric wires extend through cutout portions provided in a bottom of said case.

16. (Original) The electrical connector box according to claim 12, wherein said circuit board frame includes plural parallel fins which extend toward the exterior of said case, the fins of said circuit board frame being aligned with and adjacent to end portions of the cooling fins of said metal plate.

17. (New) An electrical connector box comprising:

a case containing at least one inner compartment and a side opening provided in a vertical side wall of said case and communicating with the at least one inner compartment;

a power distribution unit inserted into and covering the side opening of said case in a vertical orientation; and

a side frame engaging a perimeter of said power distribution unit and connected to said case for mounting said power distribution unit onto said case;

wherein said power distribution unit includes:

a printed circuit board having a first surface with bus bars thereon and a second surface with electronic components thereon;

a circuit board frame surrounding a perimeter portion of said printed circuit board, said circuit board frame including a central opening through which a central portion of said printed circuit board is exposed; and

a metal plate having a first surface positioned against said circuit board frame to cover the first surface of said printed circuit board, said metal plate including cooling fins on a second surface thereof.

18. (New) The electrical connector box according to claim 17, wherein the electronic components on the second surface of said printed circuit board are oriented toward the at least one inner compartment of said case, and the cooling fins on the second surface of said metal plate are oriented toward the exterior of said case.

19. (New) The electrical connector box according to claim 17, wherein said circuit board frame includes plural terminal connector receptacles which extend toward the at least one inner compartment of said case, and the bus bars include end tab portions bent around edges of said printed circuit board and extending beyond the second surface of said printed circuit board into the terminal connector receptacles of said circuit board frame.

20. (New) The electrical connector box according to claim 17, wherein terminal connectors on the ends of electrical wires are horizontally inserted into the terminal connector receptacles of said circuit board frame, and the electric wires extend through cutout portions provided in a bottom of said case.

21. (New) The electrical connector box according to claim 17, wherein said circuit board frame includes plural parallel fins which extend toward the exterior of said case, the fins of said circuit board frame being aligned with and adjacent to end portions of the cooling fins of said metal plate.